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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,540	10/26/2001	Lawrence Aaron Boxer	AMCC-001XX	7896

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EXAMINER	
NGUYEN, MIKE	
ART UNIT	**PAPER NUMBER**
2182	4

DATE MAILED: 06/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/016,540	BOXER ET AL.
	Examiner	Art Unit
	Mike Nguyen	2182

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Notices & Remarks

1. Applicant's amendment file on 03/26/2004 in response to Examiner's Office Action has been reviewed. The following rejections now apply.

2. Claims 1-14 are pending for the examination.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "the parallel data" in lines 9-10 of the claim 8. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-6 and 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ducaroir et al. (U.S. Pat. No. 6,167,077) in view of Hogeboom (U.S. Pat. No 6,262,998 B1).

As to claim 1, Ducaroir teaches a method of transmitting parallel data to a destination over a plurality of serial data lines (see figs 1-2), comprising the steps of:

segregating the parallel data into a plurality of parallel data words, each parallel data word comprising a plurality of data bits (see col. 4 lines 3-18);

converting the plurality of parallel data words to respective serial representations of the data words (see col. 4 lines 22-29);

transmitting the respective serial representations of the data words to the destination over the plurality of serial data lines (see col. 4 lines 22-29);

converting the transmitted serial representations of the data words to parallel form to regenerate the plurality of parallel data words (see col. 5 lines 38-57);

aligning the regenerated parallel data words(see col. 5 lines 46-67 and col. 6 lines 1-5); and

regenerating the parallel data from the aligned parallel data words (see col. 5 lines 51-57).

Although Ducaroit teaches substantial features of the method of transmitting parallel data to the destination over a plurality of serial data lines (discussed above) but he fails to teach transmitting a clock signal to the destination over a clock line in parallel with the plurality of serial data lines, the clock signal having at least one data bit of each parallel data word encoded thereon and aligning the regenerated parallel data words using the respective data bits encoded on the clock signal. Hogeboom; however, teaches transmitting a clock signal to the destination over a clock line in parallel with the plurality of serial data lines, the clock signal having at least one data bit of each parallel data word encoded thereon and aligning the regenerated parallel data words using the respective data bits encoded on the clock signal (see col. 3 lines 30-40 and col. 4 lines 27-34, 43-67). It would have been obvious to a person of ordinary skill in the art to have a

separate clock line in order to provide a more efficient high-speed parallel data bus (see col. 2 lines 2-5).

As to claim 2, Ducaroir teaches the method of claim 1 wherein the clock signal has a predetermined clock rate, and the first transmitting step comprises transmitting the respective serial representations of the data words over the plurality of serial data lines at the predetermined clock rate (see col. 4 lines 50-54).

As to claim 3, Hogeboom teaches the method of claim 1 wherein the second transmitting step comprises transmitting the clock signal to the destination over the clock line, the clock signal having a single data bit of each parallel word encoded thereon (see col. 3 lines 30-40 and col. 4 lines 27-34, 43-67).

As to claim 4, Ducaroir teaches the clock signal having an edge density sufficient to allow recovery of the clock signal at the destination (see col. 5 lines 38-57).

As to claim 5, Hogeboom teaches the method of claim 1 wherein the aligning step comprises converting at least a portion of the data bits encoded on the clock signal to parallel form to generate protocol data to generate protocol data, selecting respective bit position in each parallel data word and the protocol data, and comparing the data bits in the selected bit positions of the parallel data word and the protocol data to locate the at least one bit of the parallel data word (see col. 3 lines 30-40 and col. 4 lines 27-34, 43-67).

As to claim 6, Ducaroir teaches aligning contiguous pairs of parallel data words based on the respective locations of the at least one data bit of the contiguous parallel data word pairs (see col. 5 lines 58-67 and col. 6 lines 1-5).

Claims 8-11 and 14 are directed to a system for transmitting parallel data to a destination implementing the method of claims 1-6. Since Ducaroir and Hogeboom teach the method as set forth in claims 1-6 therefore he also teaches the system as set forth in claims 8-11 and 14.

As to claim 12, Ducaroir teaches the system of claim 11 wherein the protocol generator is configured to segregate the parallel data into the plurality of parallel data words, each parallel data word comprising 8 data bits (see col. 4 lines 7-13).

As to claim 13, Ducaroir teaches the system of claim 12 wherein each contiguous parallel data word pair comprises a first parallel data word and a second parallel data word, the first and second parallel data words comprising respective upper nibbles and respective lower nibbles, and wherein the most significant bit of the upper nibble of the first parallel data word and the most significant bit of the lower nibble of the second parallel data word are encoded on the clock signal (see col. 5 lines 58-67 and col. 6 lines 1-5).

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ducaroir and Hogeboom in view of Lecourtier et al. (U.S. Pat. No 6,560,275 B2).

As to claim 7, the combination of Ducaroir and Hogeboom fails to explicitly teach a serial data transmission rate of at least 2.5 GHz. Lecourtier; however, teaches transmitting the

respective serial representations of the data words to the destination over the plurality of serial data lines at a serial data transmission rate of at least 2.5 GHz (see fig. 5 and col. 7 lines 34-36). It would have been obviously a person having ordinary skill in the art to have a serial data transmission rate of at least 2.5 GHz by Lecourtier in order to provide reliable high-speed transmission in the presence of data skew.

Response to Arguments

8. Applicant's arguments with respect to claim 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 5,426,644 (Fujimoto)

U.S. Pat. No. 6,452,927 B2 (Rich)

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Nguyen whose telephone number is 703 305-5040. The examiner can normally be reached on 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 703 308-3301. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Nguyen
Patent Examiner
Group Art Unit 2182

06/08/2004

JEFFREY GAFFIN
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